REMARKS

Claims 1 and 6 have been amended and claims 13-16 have been added. No new matter has been added to the application. With entry of this amendment, claims 1-16 will be pending.

Claims 1-5 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner objects to reciting every component in the claim as having an amount "less than" some numerical percentage.

Claim 1 has been amended so that the cementitious material makes up approximately 18-83% of the total weight of the lumber product, the water makes up approximately 20-30% of the total weight of the lumber product, and the fiber makes up approximately 0.4-4% of the total weight of the lumber product. Support for the ranges can be found on page 6, lines 15-20 and page 14, lines 10-17. In accordance, Applicant respectfully requests removal of the §112 rejection against independent claim 1 and corresponding dependent claims 2-5.

Claims 1-3 and 5-12 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 3,979,217 ("Sutton"). Specifically, the Examiner contends that Sutton discloses lightweight cellular concrete products for uses indistinguishable from lumber comprising Portland cement, filler and about 0.4% nylon fiber. Applicant respectfully disagrees.

Sutton discloses a method for "casting cellular cement compositions into lightweight structural members particularly useful as wall, floor and roof panels in building structures." Col. 1, lines 23-26. "Such composite panels include a low strength lightweight internal core and a high strength, high density outer layer." Col. 1, lines 42-44. The resulting densities of the cellular cement compositions vary from 47.2 - 51.8 lb/ft^3, and the 7 day compression strengths vary from 231 – 534 psi. (see Table I)

The present application discloses "a method and apparatus for manufacturing high-performance fiber-reinforced cellular concrete (HPFRCC) products and the use of such products

as replacements for conventional wood lumber construction products." Application, page 5, lines 19-21. "The products of the invention have the necessary strength, durability, nailability, and sawability for direct substitution for dimensional wood lumber in wood-frame construction applications." Application, page 5, lines 21-24. The HPFRCC in Example 1 resulted in "a minimum 28-day compressive strength of 2000 psi, minimum flexural strength of 1300 psi (based on moment strength and uncracked section properties), a minimum first crack of 900 psi, a density of 75 lb per cubic foot, and conventional nail pull-out capacities comparable to STUD grade lumber (per the Uniform Building Code tables)." Application, page 15, lines 2-6.

The HPFRCC products of the present application are not the same as the cellular cement products in Sutton. The HPFRCC products are significantly more dense than the Sutton products and exhibit a significantly higher compressive strength. These variations in properties are reflected in the end uses for each of the products. The stronger, more dense HPFRCC products can be used as load-bearing members in the construction industry. In contrast, the Sutton products are used as wall, floor and roof panels, which are typically attached to load-bearing members.

Additionally, the Sutton product carries most of its strength in its dense outer layer. Although it is not clear that the outer layer is strong enough to serve as a load-bearing element, a lighter layer sandwiched between two dense layers does not provide a comparable substitute for conventional wood lumber. As pointed out by the Applicant, "it is common practice to remove parts of the dimensional lumber for fitting and other purposes in wood-frame construction ...." Application, page 2, lines 32-33. Any cutting of the outer core of the Sutton product would compromise the integrity of the structural member. In contrast, since the HPFRCC product is uniform throughout, it can be cut in any shape and to any length without compromising its integrity.

Although the Applicant feels that claims 1 and 6 as originally written disclose subject matter distinctly different from that disclosed in Sutton, Applicant has amended claim 1 and

claim 6 for clarification purposes. Claims 1 and 6 recite a lumber substitute product "wherein the product has the strength, durability, nailability, and sawability for direct substitution for dimensional wood lumber in wood-frame construction applications." The Sutton products do not exhibit these properties. Therefore, Applicant respectfully requests removal of the §102(b) rejection for independent claims 1 and 6 and corresponding dependent claims 3, 5 and 7-12.

Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Sutton. Specifically, the Examiner contends it would have been obvious to employ alkali resistant glass fibers in the composition because Sutton teaches that alkali resistant glass fibers are equivalent to the nylon fibers of the examples. Applicant respectfully requests removal of this rejection in light of the above § 102(b) discussion.

Claims 1-10 and 12 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,482,550 ("Strait"). Specifically, the Examiner recites that Table II of the patent teaches a cellular concrete structural building unit comprising 30-75% Portland cement, 1-35% cellulose fiber, 2-15% fly ash, 1-10% silica fume, 25-50% water and 0-3% air entrainer (foaming agent). Applicant respectfully disagrees with the suggestion that the HPFRCC products of the present application are the same cementitious compositions of Strait.

Strait discloses "solid, lightweight, cementitious units formed from a set solid mixture comprising ground expanded cellular polystyrene, ground cellulosic fiber, and cement, the improvement comprising reduced density and improved flexural strength resulting from the use of about 1% to about 25% by weight of recycled Styrofoam ...." Col. 3, lines 59-65. The compositions of Strait "were specifically developed for the advantages they impart to structural elements used as roofing tiles." Col. 10, lines 60-61. The materials resulting from the compositions have densities ranging from 1.289 – 1.600 g/cc, compression strengths ranging from 878 – 3209 psi, and flexural strengths ranging from 158 - 324 psi. (see Table I)

The HPFRCC products, on the other hand, "have the necessary strength, durability, nailability, and sawability for direct substitution for dimensional wood lumber in wood-frame

construction applications." Application, page 5, lines 22-24. As represented by Example 1, the compositions typically have "a minimum 28-day compressive strength of 2000 psi, minimum flexural strength of 1300 psi (based on moment strength and uncracked section properties), a minimum first crack of 900 psi, a density of 75 lb per cubic foot, and conventional nail pull-out capacities comparable to STUD grade lumber (per the Uniform Building Code tables)." Application, page 15, lines 2-6.

The HPFRCC products appear to be distinctly different from those of Strait. Most notable is the use of recycled Styrofoam in Strait and the significant difference in the product's flexural strength when compared with the HPFRCC products. Additionally, the Strait composition is tailored to roofing materials, whereas, the HPFRCC products are intended as wood lumber substitutes. As pointed out in Strait, "no single set solid cementitious mixture appears to offer the best alternative to more conventional building materials in all applications." Col. 1, lines 37-40. The HPFRCC products were designed as a wood lumber substitute that was sawable, nailable, and able to act as a load-bearing member in a structure. The Strait products were not designed for this purpose, thus resulting in materials with distinctly different physical properties.

Although Applicant believes that independent claims 1 and 6 are distinguishable over the Strait in their original form, the claims have been amended for clarification purposes. Claims 1 and 6 recite a lumber substitute product "wherein the product has the strength, durability, nailability, and sawability for direct substitution for dimensional wood lumber in wood-frame construction applications." The Strait products provide no evidence of sawability, nailability, or the ability to act as load-bearing members in a structure. Therefore, Applicant respectfully requests removal of the §102(b) rejection for independent claims 1 and 6 and corresponding dependent claims 3-5, 7-10 and 12.

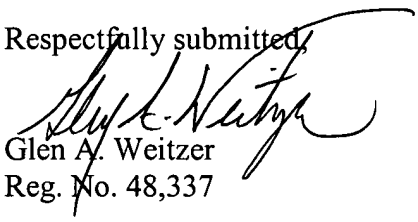
Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Strait in view of U.S. Patent 2,205,735. Specifically, the Examiner contends the amount of aluminum powder

in the claim overlaps with the amount of aluminum powder cited in the reference. Applicant respectfully requests removal of this rejection in light of the above §102(b) regarding Strait.

Applicant adds claims 13-16 to further specify some of the physical attributes of the claimed lumber product that distinguish from both Sutton and Strait.

The Examiner is invited to contact the undersigned attorney should the Examiner determine that such action would facilitate the prosecution and allowance of the present application.

Respectfully submitted,



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